We Claim:

- 1. A method of verifying a data path from a source node to a destination node in a bridged Ethernet network, the data path including a source edge node connected to the source node and a destination edge node connected to the destination node, comprising the steps of:
- a)creating, at the source edge node, a path verification request message;
- b) encapsulating, by the source edge node, the request message in a first Ethernet frame including a path verification request indication;
- c) sending the first Ethernet frame towards the destination node along the data path;
- d) detecting, at the destination edge node, the first Ethernet frame;
- e) creating, at the destination edge node, a path verification response message;
- f) encapsulating, by the destination edge node, the response message in a second Ethernet frame including a path verification response indication;
- g) sending the second Ethernet frame towards the source node along the data path;
- h) detecting, at the source edge node, the second Ethernet frame; and
- i)determining, by the source edge node responsive to receiving the response message, that the data path is operational.
- 2. The method as defined in claim 1 wherein steps d) and h) include the step of filtering the frames from data traffic on the data path according to request and response indications respectively.
- 3. The method as defined in claim 1 wherein steps b) and f) include the step of addressing the frames to the destination/source edge nodes and steps d) and h) include the step of terminating the frames.

- 4. The method as defined in claim 3 wherein prior to step a) the destination edge node is discovered.
- 5. The method as defined in claim 4 wherein the destination edge node is discovered by using a hop-by-hop technique wherein the address of the destination node is carried by a discover request message.
- 6. The method as defined in claim 4 wherein destination edge node is discovered by sending a discover request message to a special multicast address, and the destination edge node adjacent to the destination node responds to the discover request message.
- 7. The method as defined in claim 1 further include the step of calculating a round trip delay by adding a time stamp to the verification message and calculating, by the source edge node the delay responsive to receiving the response message.
- 8. A system for verifying a data path from a source node to a destination node in a bridged Ethernet network, the data path including a source edge node connected to the source node and a destination edge node connected to the destination node, comprising:

 means, at the source edge node, for creating a path verification request message;

 means, at the source edge node, for encapsulating the request message in a first Ethernet frame including a path verification request indication;

 means for sending the first Ethernet frame towards the destination node along the data path;

means, at the destination edge node, for detecting the first Ethernet frame;

means, at the destination edge node, for creating a path verification response message;

means at the destination edge node for encapsulating the response message in a second Ethernet frame including a path verification response indication; means for sending the second Ethernet frame towards the source node along the data path;

means, at the source edge node, for detecting the second Ethernet frame; and means, at the source edge node responsive to receiving the response message, for determining that the data path is operational.

9. A method of tracing a data path route from a source node to a destination node through multiple intermediate nodes in a bridged Ethernet system comprising:

sending a succession of Ethernet encapsulated route query messages from the source node, each message containing a media access control (MAC) address of the destination node;

receiving, at route trace enabled bridges in the system, the encapsulated route query messages;

determining at a control plane of the route trace enabled bridges a MAC address of a next hop bridge on route to the destination node;

returning the MAC address of the next hop bridge to source node in a response message;

repeating the sequence through remaining intermediate bridges until a response message indicating that the destination node has been identified; and tabulating information in the response messages.

- 10. The method as defined in claim 9 wherein when the encapsulated route query messages are received at a non-enabled route trace bridge steps are taken to skip to a route trace enabled bridge.
- 11. The method as defined in claim 10 wherein the service node sends a multi cast message to nodes downstream of the non-enabled bridge to locate a route trace enable bridge in the route to the destination node.
- 12. The method as defined in claim 11 wherein the encapsulated route query message is sent to the bridge next to the non-enabled bridge which responds to the multi cast message.
- 13. The method as defined in claim 9 wherein the query message includes address information of the source and destination nodes at connection type.
- 14. The method as defined in claim 9 wherein the query message also includes a time stamp value entered by the control plane at respective route trace enabled bridges.
- 15. The method as defined in claim 9 wherein the response message includes address information of the source nodes and destination node.
- 16. The method as defined in claim 9 wherein the step of tabulating information generates a report defining bridges traversed by the Ethernet frame.
- 17. The method as defined in claim 14 wherein time stamp information respecting each bridge traversed included in the report.

18. A system for tracing a data path route from a source node to a destination node through multiple intermediate nodes in a bridged Ethernet system comprising:

means for sending a succession of Ethernet encapsulated route query messages from the source node, each message containing a media access control (MAC) address of the destination node;

a control plane at route trace enabled bridges in the system to receive the encapsulated route query messages;

means at a control plane of the route trace enabled bridges for determining a MAC address of a next hop bridge on route to the destination node;

returning the MAC address of the next hop bridge to source node in a response message;

means for repeating the sequence through remaining intermediate bridges until a response message indicating that the destination node has been identified; and means for tabulating information in the response messages.